



# 2011 PMOC Annual Meeting

FEDERAL TRANSIT ADMINISTRATION

## Los Angeles New Starts Projects Risk Experience

Westside Subway Extension  
Regional Connector

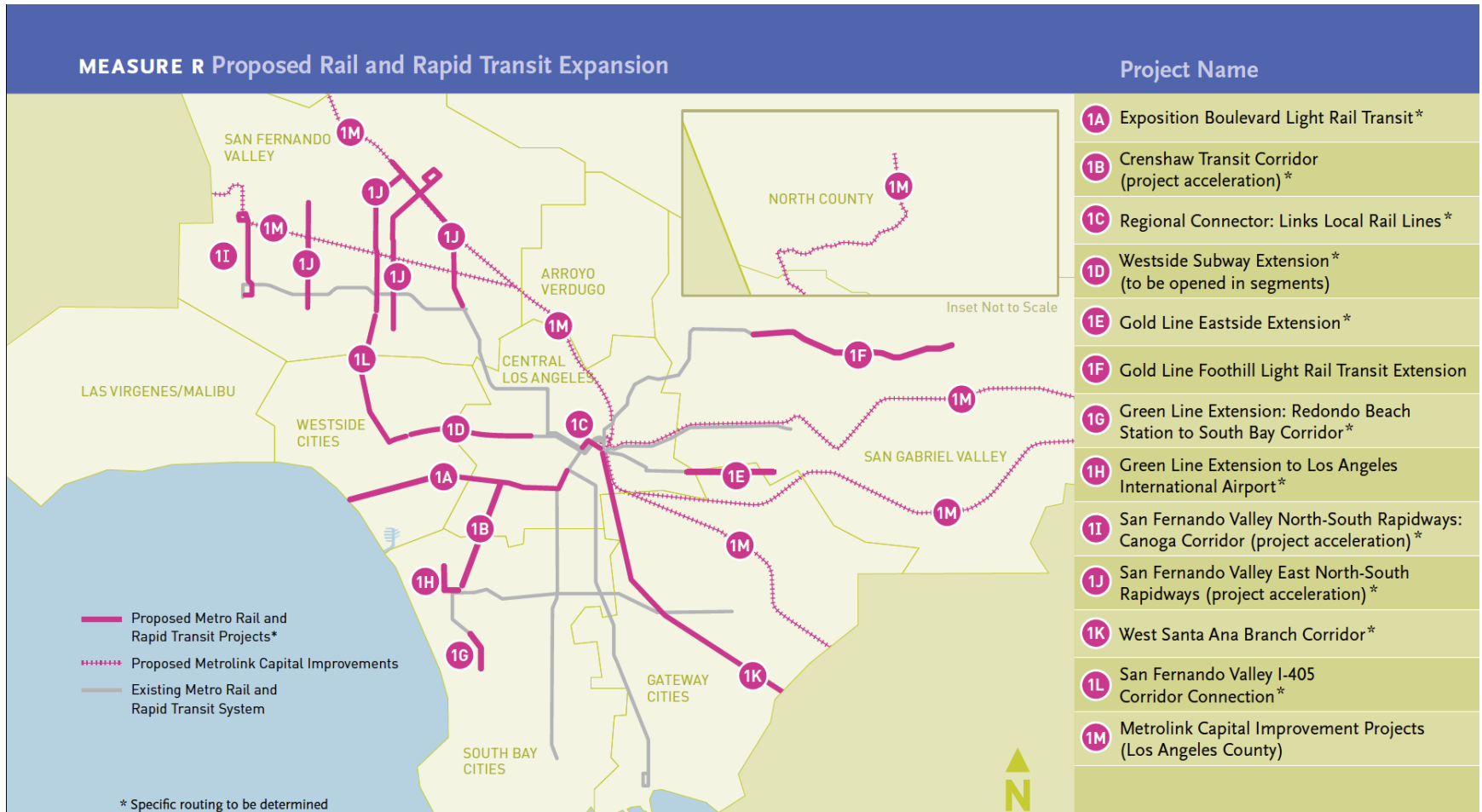


# Agenda

- Program Background
- Roadmap Process
- Accelerated Oversight Schedule
- Grantee Internal Risk Assessment
- FTA/PMOC Risk Assessment
- Major Risks
- Project Budget at Entry into PE
- Future Considerations

# Los Angeles County Measure R

- Commits Projected \$40 billion to traffic relief and transportation over 30 years



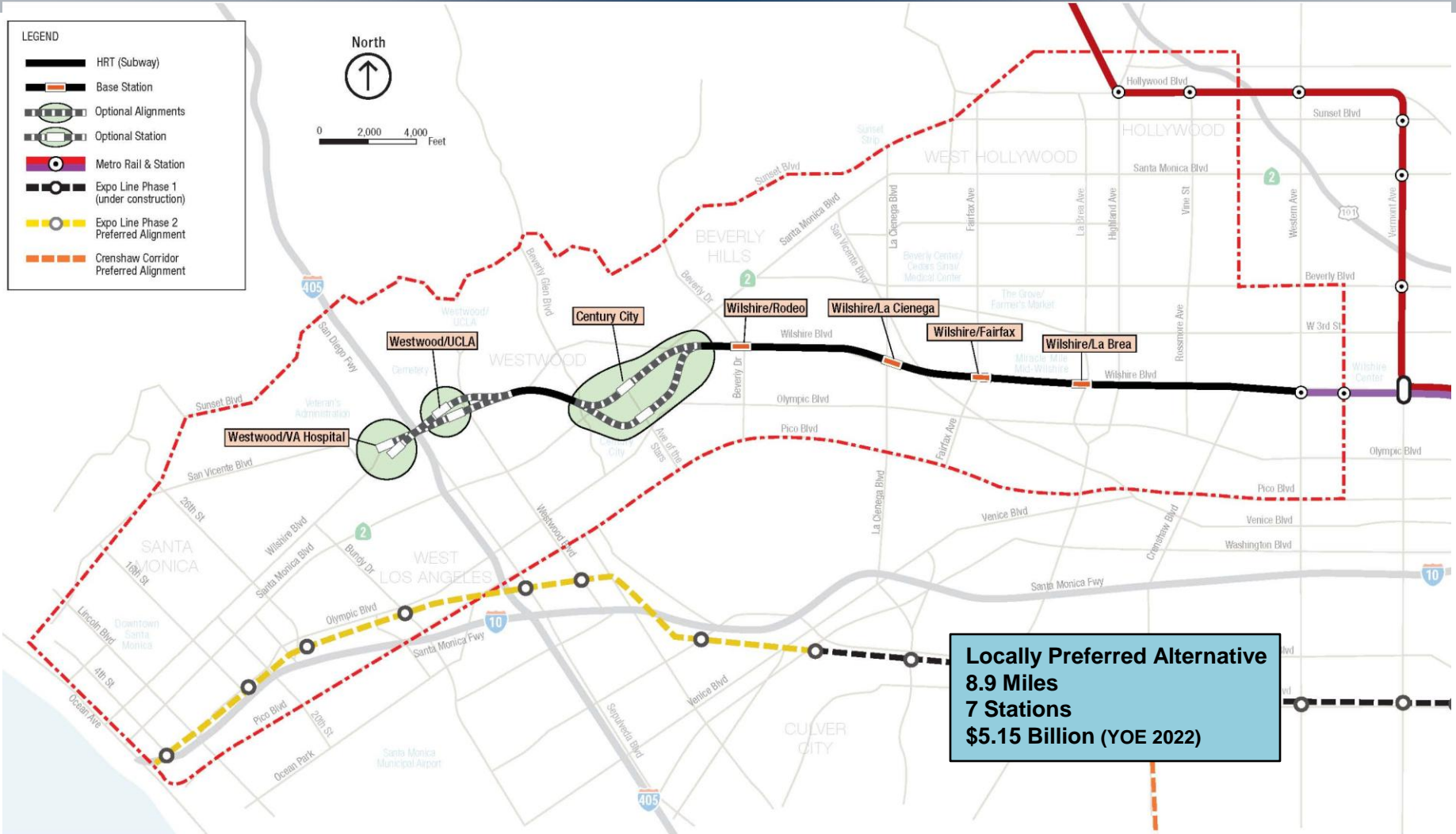
# Los Angeles 30/10 Initiative

- **Goal: Accomplish 30 years of transit projects in 10 years**
- **Accelerating 12 Key Metro Projects**

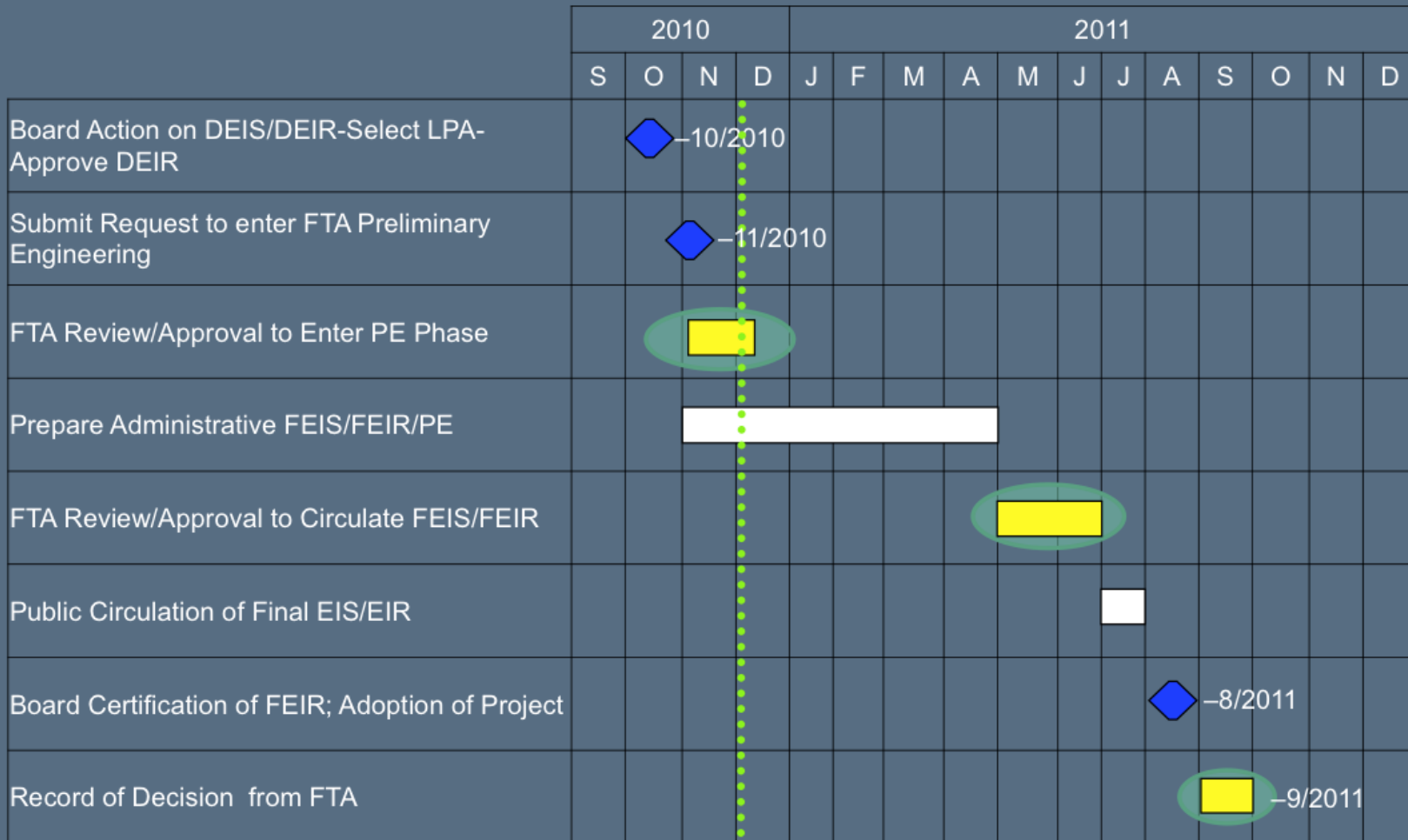
- **Long-Term Bonds and Federal Loan backed by Measure R**
  - Transit Improvement Bonds (TIBs)
  - Transportation Infrastructure Finance and Innovation Act (TIFIA)
  - Early Systems Work Agreement



# Westside Subway Extension LPA



# Westside DEIS/DEIR Schedule



Last Revised: 11/3/10

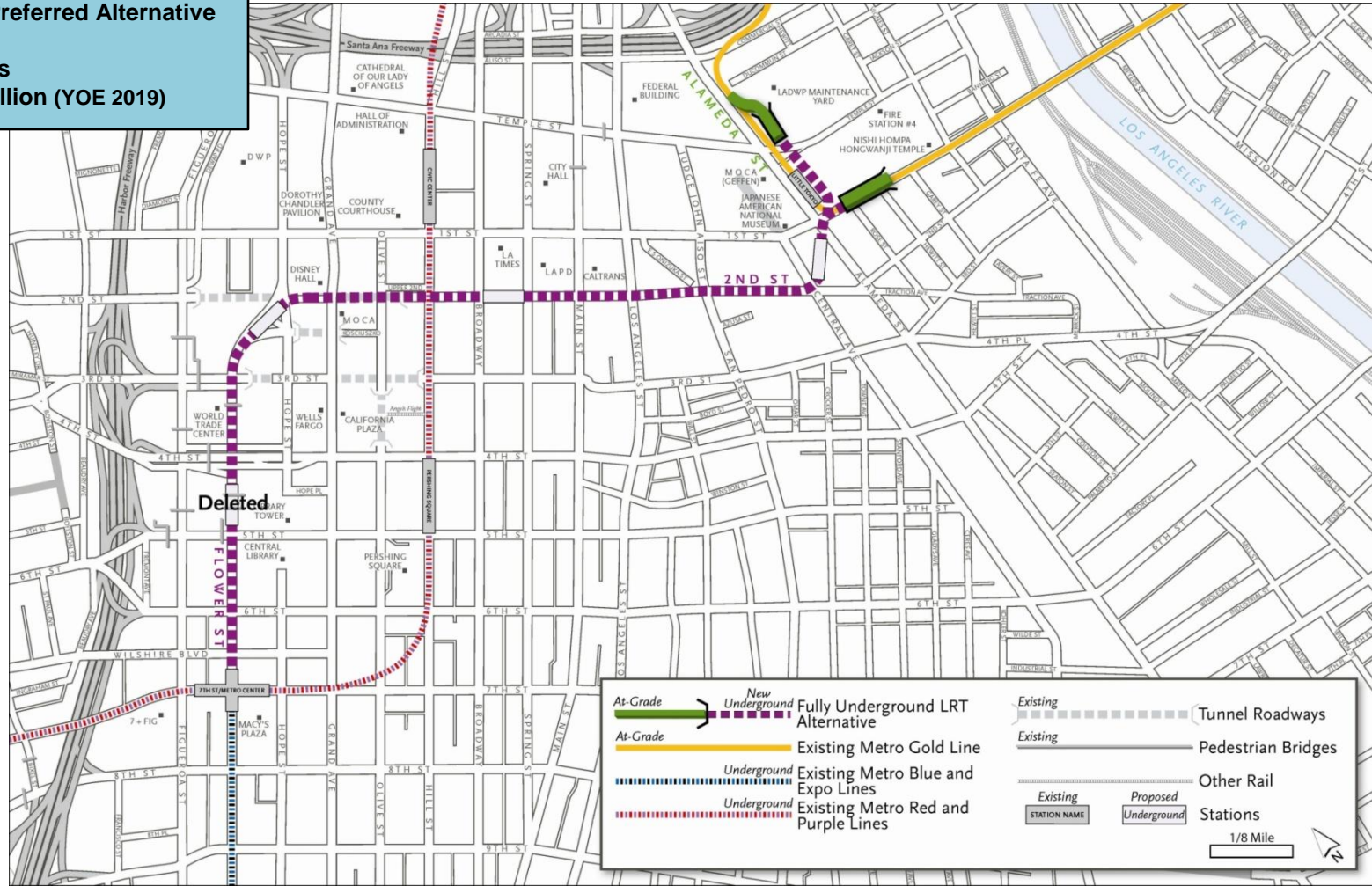


◆ = Milestone Date      ■ = FTA Action

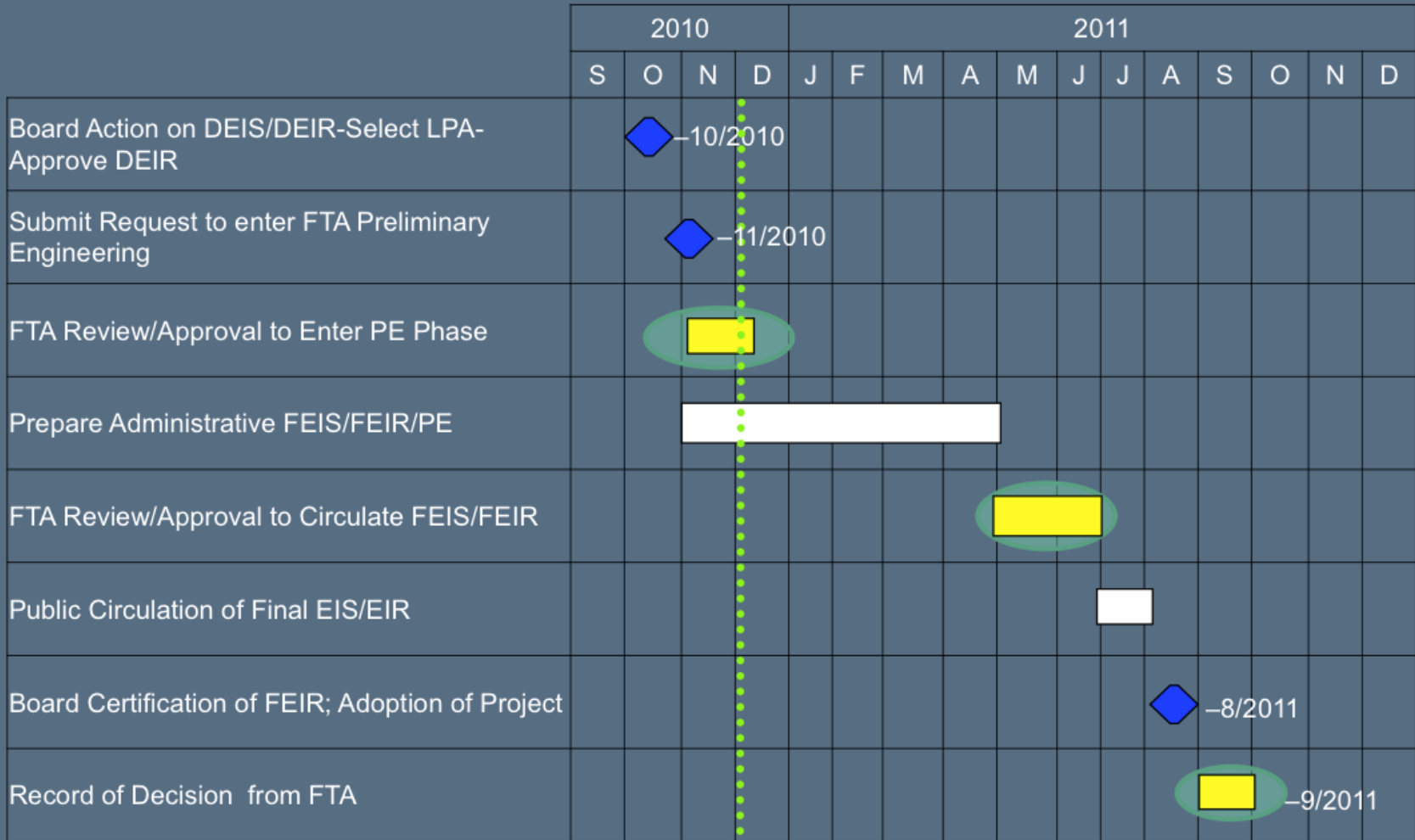


# Regional Connector LPA

**Locally Preferred Alternative**  
**1.9 Miles**  
**3 Stations**  
**\$1.366 Billion (YOE 2019)**



# Regional Connector DEIS/DEIR Schedule



Last Revised: 11/3/10



◆ = Milestone Date

■ = FTA Action



# Timeline for FTA Involvement

Activity	Westside Date	Regional Date
Commence PMOC Activities	Jul	Jun
DEIS/DEIR – Grantee 2 <sup>nd</sup> Submittal	Aug 20	Jul 16
DEIS/DEIR – FTA Approval	Aug 26	Aug 26
Independent Risk Assessment Team On-Board	Aug 17	N/A
Grantee Internal Risk Assessment	Jul 13	Aug 17
Commence Characterization Reviews	Sep 01	Sep 01
Complete Characterization Reviews	Oct 04	Oct 04
PMOC Risk Assessment	Oct 12	Oct 14
Grantee Request to Enter PE	Nov 01	Nov 01
OP-40 Risk Assessment Report	Dec 20	Nov 12
Draft Readiness to Enter PE Report	Nov 29	Nov 29
Draft FTA Letters/Memos – Entry into PE	Nov 29	Nov 29
FTA PE Approval Letter Issued to Grantee	Jan 04	Jan 04
<b>Total Duration</b>	<b>5 Months</b>	<b>6 Months</b>

# Roadmaps

- FTA checklist of Entry into PE items
- Completed checklist results in PE approval
- Introductory Meeting; FTA, PMOC, Metro
- Monthly Conference calls - status, new dates
- Special meetings as necessary - deliverables
- FTP site for easy review - sorted by line item
- CEO attendance to ensure commitment
- Common goal – accelerated timeline to PE

**Road Map for Preliminary Engineering Approval - LACMTA Westside Subway Extension (9-24-2010)**

No.	PRODUCTS	Initial Expected Delivery Dates	Revised Delivery Date	Completion Date	FTA /PMOC Comments	FTA Acceptance	Responsible Agency/Person	Comments
<b>ALTERNATIVES ANALYSIS (AA)</b>								
1	Alternatives Analysis Report Approved by Board	1/22/09		1/22/09		1/22/09	LACMTA	LACMTA Board Approves AA Study January 22,
2	Detailed Description of Baseline Alternative (and Operating Plan)	3/15/09		3/15/09		3/15/09	LACMTA	
3	Project Site and Vicinity Maps	3/15/09		3/15/09		3/15/09	LACMTA	
<b>NEPA DEIS</b>								
4	NEPA Scoping	5/7/09		5/7/09		5/7/09	LACMTA	NOI Published in Federal Register March 24,
	Admin Draft EIS to FTA	4/22/10		4/22/10		4/22/10	LACMTA	LACMTA revised submittal on 7/14/10; FTA comments submitted on 8/5/10 of July 2010 version
5								
6	2nd Admin Draft EIS to FTA	7/14/10	8/20/10			8/20/10	LACMTA	
	FTA Approval/Sign-off of DEIS	8/13/10	8/25/10	8/26/10	#6 delivery date + 30 days	8/26/10	FTA	
8	Federal Register Notice of Availability DEIS	8/27/10		9/3/10		9/3/10	FTA	
9	DEIS Public Hearings	9/24/10	9/20/10				LACMTA	5 hearings scheduled to start on 9/20
10	Close of Public Comment Period	10/11/10	10/18/10				LACMTA	
11	LACMTA Board Selects LPA	10/28/10					LACMTA	
<b>Travel Forecasts</b>								
12a	Results Report	8/31/10		9/21/10			LACMTA	
12b	Calibration/Validation Report	9/20/10	9/30/10					
13	Uncertainty Analysis	8/31/10	9/21/10	9/21/10			LACMTA	
14	Summit Reports and Maps	9/25/10		9/22/10			LACMTA	
15	Travel Forecasts Template	8/25/10	8/27/10	8/27/10			LACMTA	
16	Annualization Factor Justification	4/1/10	7/2/10	4/1/10			LACMTA	Information updated on 7/2/10
<b>Cost, Scope and Schedule</b>								
17	Capital Cost Estimate in Original Format and Standard Cost Category (SCC) Format (for Baseline and Built Alts), and Schedule	7/6/10		9/16/10	Delivery Date plus 30 days		LACMTA	SCC and cost methodology uploaded to FTP site. Internal risk assess. Update for PE. Still waiting for SCC workbook. <b>Characterization review based on data as of 9/17/10.</b>
18	Planning Diagrams, Design Criteria, Concept Design Drawings and Specifications for guideway, stations, support facilities, sitework, systems, real estate, vehicles	7/6/10		9/15/10	Delivery Date plus 45 days		LACMTA	PMO still needs add'l details will work w/MTA.
19	Documentation of passenger level boarding design for all stations and/or satisfactory determination of infeasibility for one or more stations and satisfactory alternative plan for accessibility	7/6/10		7/6/10			LACMTA	Drawings have been posted on FTP site. If FTA determines the info is sufficient, they will forward to TCR in HQ.
20	Summary of O&M Cost Methodology Assumptions/Productivities	7/6/10		7/6/10			LACMTA	PMO will analyze along w/cost, schedule, scope review.
<b>Capital Programming</b>								
21	Project Adoption by MPO in Constrained (and conforming) LTRP	9/24/10	TBD				LACMTA	
22	TIP and STIP Programming of PE Phase (RTIP)	9/24/10	TBD				LACMTA	
<b>PROJECT MANAGEMENT PLAN (PMP) 1</b>								
<b>Basic Requirements</b>								
23	Project Sponsor Staff Organization	7/19/10		9/15/10	Delivery Date +30 Days		LACMTA (Proj Control)	Uploaded by chapter onto FTP site.
24	Project Budget & Schedule	7/19/10		9/15/10	Delivery Date +30 Days		LACMTA (Proj Control)	Date will be based upon when FTA/PMOC receives the documentation for review, not when the documentation was completed.
<b>Procedures</b>								
25	Document Control Procedures	7/6/10		7/9/10	Delivery Date +30 Days		LACMTA (Proj Control)	PMO comments estimated 8/13/10
26	Change Order Procedures	7/6/10		7/9/10	Delivery Date +30 Days		LACMTA (Proj Control)	PMO comments estimated 8/13/10
27	Material Testing Procedures	7/6/10		7/9/10	Delivery Date +30 Days		LACMTA (Proj Control)	PMO comments estimated 8/13/10
28	Internal Reporting Procedures	7/6/10		7/9/10	Delivery Date +30 Days		LACMTA (Proj Control)	PMO comments estimated 8/13/10
29	Operational Testing Procedures	7/6/10		7/9/10	Delivery Date +30 Days		LACMTA (Proj Control)	PMO comments estimated 8/13/10
30	Quality Assurance/Quality Control (QA/QC)	7/6/10		7/9/10	Delivery Date +30 Days		LACMTA (Proj Control)	PMO comments estimated 8/13/10

Plans								
31	Contracting Plan for Preliminary Engineering Phase (Document to be used for Industry Review)	7/6/10		9/7/10	Delivery Date +30 Days	8/16/10	LACMTA	SOW not RFP; PMO comments estimated 8/13/10
32	Real Estate Acquisition Management Plan (RAMP)	7/9/10		7/9/10	Delivery Date +30 Days		LACMTA (Real Estate)	Date will be based upon when FTA/PMOC receives the documentation for review, not when the documentation was completed. PMO comments estimated 8/13/10. RAMP est by FTA 9/1/10.
33	Fleet Management Plans--LACMTA	9/1/10	9/30/10		Delivery Date +30 Days		LACMTA (Operations)	Date will be based upon when FTA/PMOC receives the documentation for review, not when the documentation was completed.
34	Safety & Security Management Plan (SSMP)	7/9/10		7/9/10	Delivery Date +30 Days		LACMTA (F/L/S)	Date will be based upon when FTA/PMOC receives the documentation for review, not when the documentation was completed. PMO comments estimated 8/13/10. RAMP est by FTA 9/1/10.
35	Third Party Agreements and Permits (Identified and Scheduled)	8/1/10		8/10/10	Delivery Date +30 Days		LACMTA (3rd Party)	PMO to comment.
36	Contract Implementation Plan for Construction	9/1/10		9/1/10	Delivery Date +30 Days		LACMTA (Proj Control)	PMO to comment next week.
37	PMO Review of Pre-PE Plans (#32 - 36)	10/1/10			See above.		PMOC	
	Pre-PE Financial Capacity Assessment	10/15/10					FMOOC	Date will be based upon when FTA/PMOC receives the documentation for review, not when the documentation was completed.
38	Pre-PE Risk Assessment Workshop	9/15/10	10/12-13/10	9/15/10	TBD, Transit Capacity, Scope, Schedule, Cost Reviews + 30 days and Grantee Response + 15 days		PMOC	Date will be based upon when FTA/PMOC receives the documentation for review, not when the documentation was completed.
39								
40	Risk & Contingency Management Plan (address significant areas of uncertainty in scope, cost and schedule)	9/30/10	10/22/10				LACMTA	
41	Pre-PE Cost, Scope, Schedule, Readiness Review; PMOC Spot Report	10/30/10	11/22/10		Risk Assessment Workshop +45 days		PMOC	Date will be based upon when FTA/PMOC receives the documentation for review, not when the documentation was completed. PMO comments estimated 8/13/10. RAMP est by FTA 9/1/10. PMO initial draft planned for 11/22.

NEW STARTS TEMPLATES, CERTIFICATIONS, AND OTHER REPORTS								
42	Before-and-After Project Study Plan, Documentation of Methods and "Predicted" Results and Identification of Responsible Contractors	10/1/10					LACMTA (Planning)	
43	Annualized Capital and Operating Costs in SCC Worksheets (for Baseline and Build Alts.)	8/27/10		8/27/10			LACMTA (Planning)	
44	New Starts Templates for travel forecasts, mobility, cost-effectiveness, operating efficiencies	8/27/10		9/8/10			LACMTA (Planning)	Preliminary New Starts Rating Templates submitted and will be revised; Submittal is required earlier to meet PE approval within the desired timeframe. Conference call w/TPE/MTA on 9/23/10. Need revised Templates, estimated by 10/1/10.
45	Financial Plan Summary	8/27/10		9/8/10			LACMTA (Planning)	Dwayne to follow-up.
46	Checklist for Financial Submittals	8/27/10		9/8/10			LACMTA (Planning)	
47	20-Year Capital Financial Plan - system wide	8/27/10		9/8/10			LACMTA (Planning)	
48	20-Year Operating Financial Plan - system wide	8/27/10		9/8/10			LACMTA (Planning)	
49	Evidence of Agency Financial Condition	8/27/10		9/8/10			LACMTA (Planning)	
50	Supporting Financial Documentation	8/27/10		9/8/10			LACMTA (Planning)	
51	Land Use Templates and Supporting Documentation	8/27/10		9/8/10			LACMTA (Planning)	Preliminary New Starts Rating Templates Submitted April 8, 2010; Submittal is required earlier to meet PE approval within the desired timeframe.
52	The Case for the Project (optional)	8/27/10		9/8/10			LACMTA (Planning)	
53	Project Description Template	8/27/10		9/8/10			LACMTA (Planning)	Preliminary New Starts Rating Templates Submitted April 8, 2010; Submittal is required earlier to meet PE approval within the desired timeframe. Conference call w/TPE/MTA on 9/23/10.
54	Certification of Technical Methods and Planning Assumptions	8/27/10		9/8/10			LACMTA (Planning)	
55	FTA QA/QC Review of Project Templates	9/27/10			30 days + substantial templates		FTA	TPE comments on 9/23/10.
<b>FTA Evaluation and Rating</b>								
56	Project Justification	11/1/10					FTA	
57	Land Use/Economic Development	11/1/10					FTA	
58	Local Financial Commitment (include FMO review)	11/1/10					FTA	
<b>ADMINISTRATIVE REQUIREMENTS</b>								
59	Grantee Letter of Request for PE Initiation	10/29/10					LACMTA	
60	Formal NS/PE Submittal	10/29/10					LACMTA	
61	FTA Memorandum and Letter Admitting Project Into PE	11/29/10					FTA	
62	10-Day Congressional Notification						FTA	

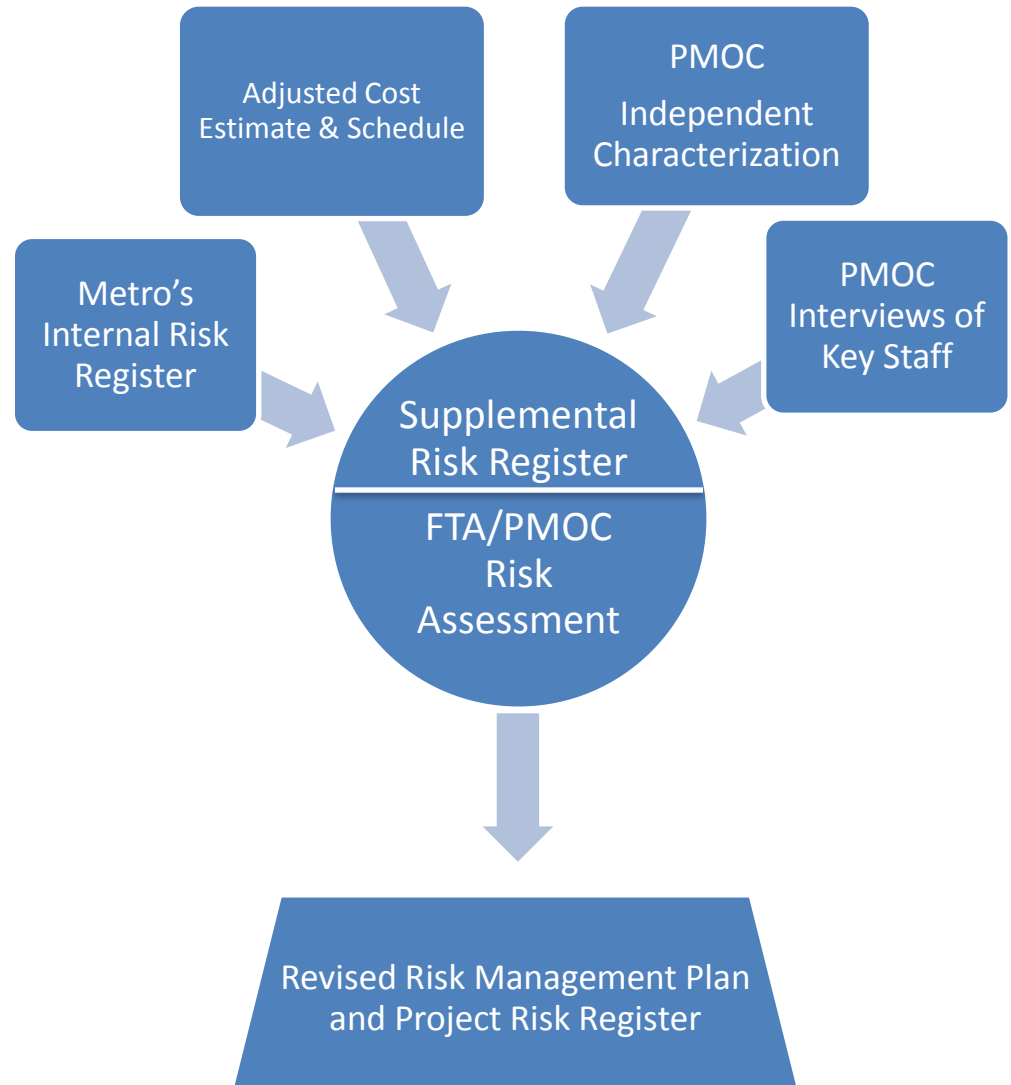
# Metro's Internal Risk Assessment

- Internal Risk Assessment Workshop conducted in August 2010 in a proactive effort to advance the project into PE
- FTA/PMOC Teams actively participated with subject area experts to provide input, suggestions, comments
- FTA/PMOC input, comments, suggestions were welcomed throughout the process and incorporated into the risk register

PROJECT RISK REGISTER				Low	Medium	High	Very High	Significant		
Regional Connector Transit Corridor Project				Legend	Score	1	2	3	4	5
Project No.				<= 3	Probability	< 10%	10-50%	50 - 75%	75 - 90%	> 90%
Rev:				3 - 10	Cost	< \$250K	\$250K - \$1M	\$1M - \$3M	\$3M - \$10M	> \$10M
Date Issue: Aug 2010				>= 10	Schedule	< 1 Mths	1 - 3 Mths	3-6 Mths	6 - 12 Mths	> 12 Mths
Risk ID	Risk Location	Risk Description	Comments & Notes	Probability Rating	Cost Impact (A)	Time Impact (B)	Risk Rating % x (A+B)/2			
<b>10 GUIDEWAY &amp; TRACK ELEMENTS</b>										
<b>10.06 Guideway: Underground cut &amp; cover</b>										
82	Wye Connection from 2nd/Central Ave Station to the Metro Gold Line and the Portals	Y junction will require ventilation - jet fans will also be required at Portal; costs may be underestimated	Jet fans are required to be located right before the portal. The "WYE" junction cavern will have to be fully ventilated and lighted; costs may need to be increased as design evolves	5	4	0	10			
46	Cut and Cover Tunnel along Flower Street	Flower Street cut and cover may have to be completely decked over during construction	Base assumption is decking only to be provided at street crossings/ intersections (Note see Risk #47 specific to utility relocations on Flower Street)	3	5	0	7.5			
48	Cut and Cover Tunnel along Flower Street	Structural means may be required to support existing friction battered piles on City bridge over Flower Street	The approach to supporting the existing battered piles from the City bridge is yet to be designed	5	3	0	7.5			
49	Cut and Cover Tunnel along Flower Street	Excavation on Flower Street for cut and cover could require additional support for muck out and more complex staging arrangements than envisaged		2	3	2	5			

# Collaborative Risk Assessment Process

- Independent Risk Assessment
- Supplemental Risk Register
- Independent Contingency Assessment
- Independent Risk Model





# Summary of Top Risks

## Westside Subway Extension

- Market risk due to multitude of concurrent projects
- 1.5 Miles of Gassy grounds, including Methane (CH<sub>4</sub>), Hydrogen Sulfide (H<sub>2</sub>S) and Tar Sands
- Paleontological Deposits – La Brea Tar Pits
- Abandoned Oil Wells
- Crossing the Santa Monica Fault
- Tunneling under Properties, including Beverly Hills High School
- Right of Way Acquisitions – Beverly/Rodeo and Fairfax Stations
- Station Footprint Design

# Summary of Top Risks Regional Connector

- Market risk due to multitude of concurrent projects
- Lacking overall project definition in accelerated PE effort leading to Design/Build
- Crossing beneath the existing Red Line
- Tie-Backs along Flower Street
- Public Impacts due to length of Cut-and-Cover
- Deep Cut-and-Cover Station Construction
- Quantity of Vehicles potentially underestimated

# Establishing the New Starts Budget

- New Starts Process – Entry into PE
- Grantee Cost Estimate
- Cost Estimate/Schedule Review/Adjustments
- Risk Assessment
- Contingency Review
  - Forward and Backward Pass

# Mitigation Targets

## 6.5.3 Secondary Risk Mitigation Recommendations

The PMOC shall develop recommendations for activities to accomplish development of Secondary Risk Mitigation capacity. These recommendations shall include the targeted magnitude of the cost or time savings expected, as well as a description of the scope, deliverables, and outcomes of the activity. The PMOC will also recommend progress-reporting intervals for tracking the utilization and management of such mitigation capacities; as well as any integration with the Grantee's overall program schedule and resource loading. All important assumptions shall be identified along with their rationales.

**Mitigation Targets** are amounts of mitigation capacity that are recommended to be developed by the Grantee on a phase-by-phase basis, expressed as the total of estimated project cost plus project contingency plus Secondary Risk Mitigation capacity. These targets are developed using probability curves developed in the FTA cost risk assessment workbook. The amount of Secondary Risk Mitigation capacity to be developed for a given phase is the difference between 1) the project estimate including contingency (as adjusted by the PMOCs recommendations) and a target amount developed from the phase-appropriate probability curve in the risk assessment worksheet. Table 2 provides the recommended, phase-appropriate target factors to use to determine the target amount from the workbook probability curves. The PMOC may, with the FTA work order manager's approval, modify these targets based upon overlapping Grantee milestones, actual progress beyond a given phase, or additional milestones lying between these standard phases.

# Mitigation Targets

## 6.5.3 Secondary Risk Mitigation Recommendations

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# OP40 - Mitigation Target Percentages

Milestone	Target
Entry into Preliminary Engineering	10%
Entry into Final Design	30%
FFGA Award	50%
40% Bid	60%
20% Construction	70%
50% Construction	80%
75% Construction	85%
90% Construction	90%



# Cost Estimate Adjustments Westside Subway Extension

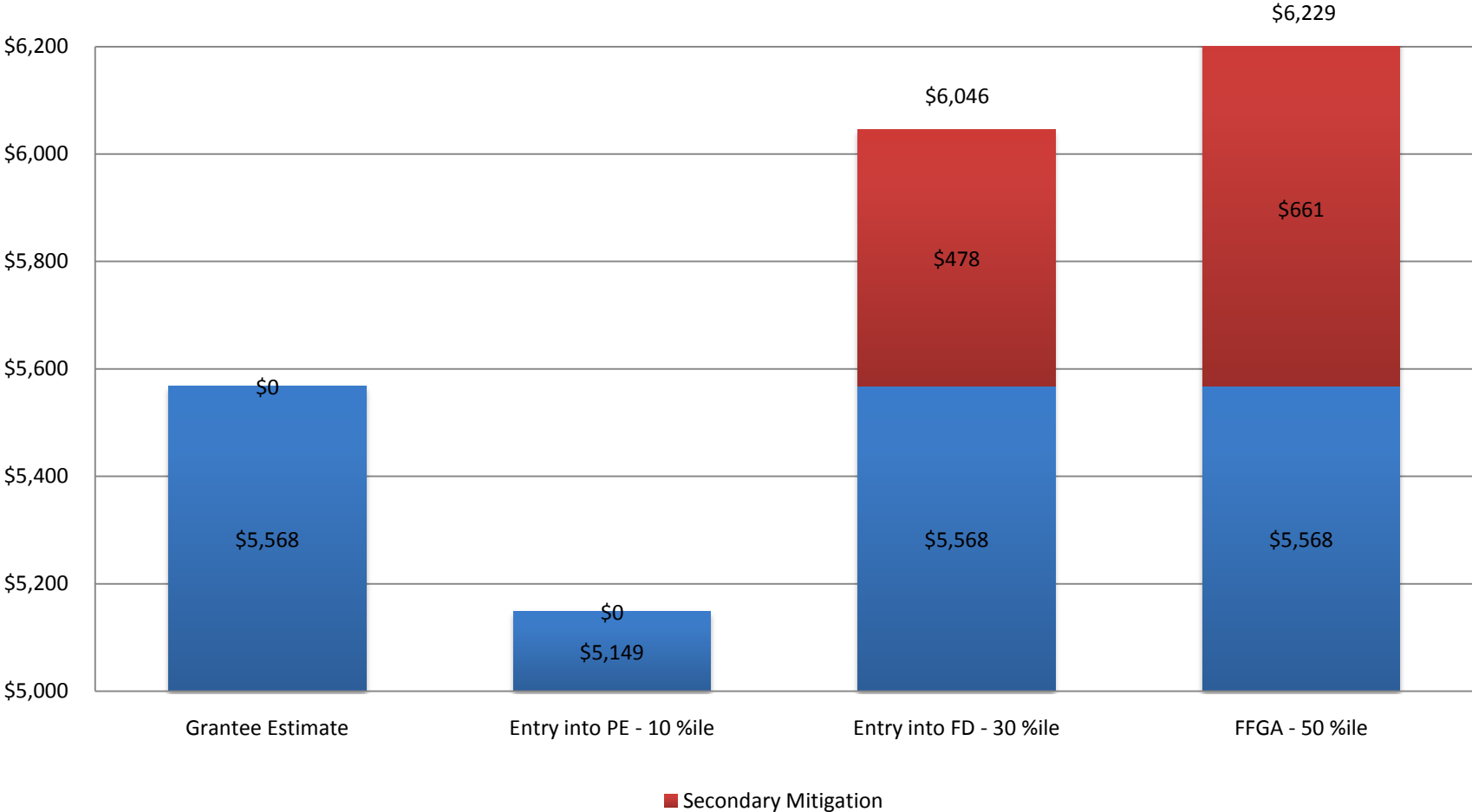
<b>Estimate</b>	<b>Total YOE Estimate (x,000)</b>	<b>Delta to Metro Cost (x,000)</b>
<b>Metro</b>	<b>\$5,129,000</b>	<b>-</b>
<b>Risk Model – Target</b>	<b>\$5,149,000</b>	<b>\$20,000</b>
<b>Adjustments to Metro Cost Estimate</b>	<b>\$5,568,000</b>	<b>\$439,000</b>

# Cost Estimate Adjustments Westside Subway Extension

Estimate	Total YOE Estimate (x,000)	Incremental Cost Increase (x,000)	Delta to Metro Cost (x,000)
<b>Metro</b>	<b>\$5,129,000</b>		-
<b>Risk Model – Target</b>	<b>\$5,149,000</b>	<b>\$20,000</b>	<b>\$20,000</b>
<b>Adjustments to Metro Cost Estimate</b>			
A: Inflation at 2% (2011), 3% (2012), 4% (2013+)	\$5,332,000	\$203,000	\$203,000
B: A + Increase Schedule approx. 2 yrs to 2024	\$5,488,000	\$156,000	\$359,000
C: B + Technical Adjustments <sup>1</sup>	<b>\$5,568,000</b>	<b>\$80,000</b>	<b>\$439,000</b>

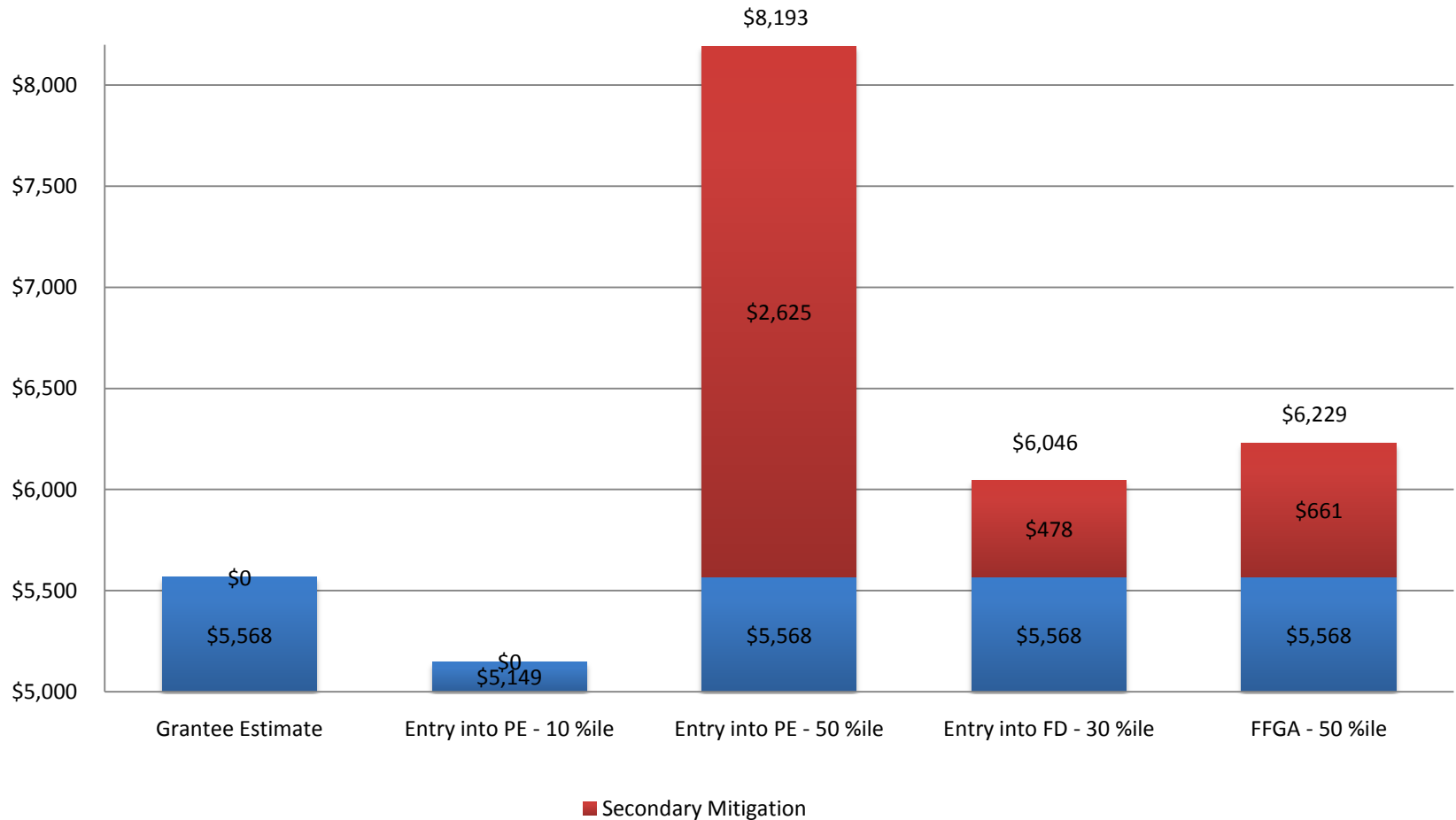
# Looking Ahead to Entry-to-FD

## Westside Risk Assessment Entry into Preliminary Engineering



# Looking Ahead to Entry-to-FD

## Westside Risk Assessment Entry into Preliminary Engineering



# Cost Estimate Adjustments Regional Connector

<b>Estimate</b>	<b>Total YOE Estimate (x,000)</b>	<b>Delta to Metro Cost (x,000)</b>
<b>Metro</b>	<b>\$1,342,116</b>	<b>-</b>
<b>Risk Model – Target</b>	<b>\$1,547,000</b>	<b>\$205,000</b>
<b>Adjustments to Metro Cost Estimate</b>	<b>\$1,550,848</b>	<b>\$208,731</b>

# Cost Estimate Adjustments

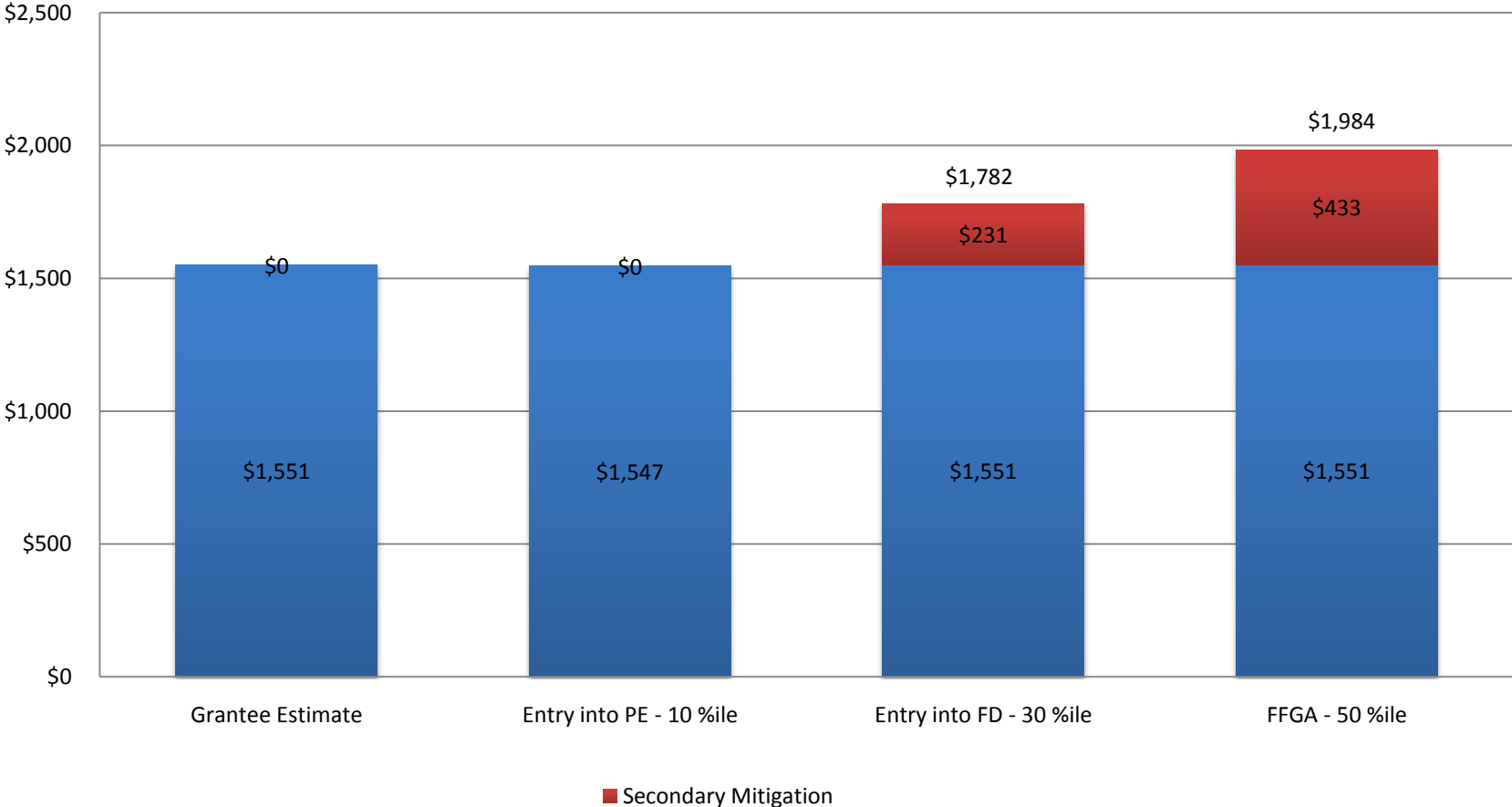
## Regional Connector

Estimate	Total YOE Estimate (x,000)	Incremental Cost Increase (x,000)	Delta to Metro Cost (x,000)
<b>Metro</b>	<b>\$1,342,116</b>		-
<b>Risk Model – Target</b>	<b>\$1,547,000</b>	<b>\$205,000</b>	<b>\$205,000</b>
<b>Adjustments to Metro Cost Estimate</b>			
A: Technical Adjustments <sup>1</sup>	\$1,447,787	\$105,671	\$105,671
B: A + Inflation at 2% (2011), 3% (2012), 4% (2013+)	\$1,499,000	\$51,213	\$156,884
C: B+ Increase Schedule approx. 2 yrs to 2024	<b>\$1,550,848</b>	\$51,848	<b>\$208,731</b>



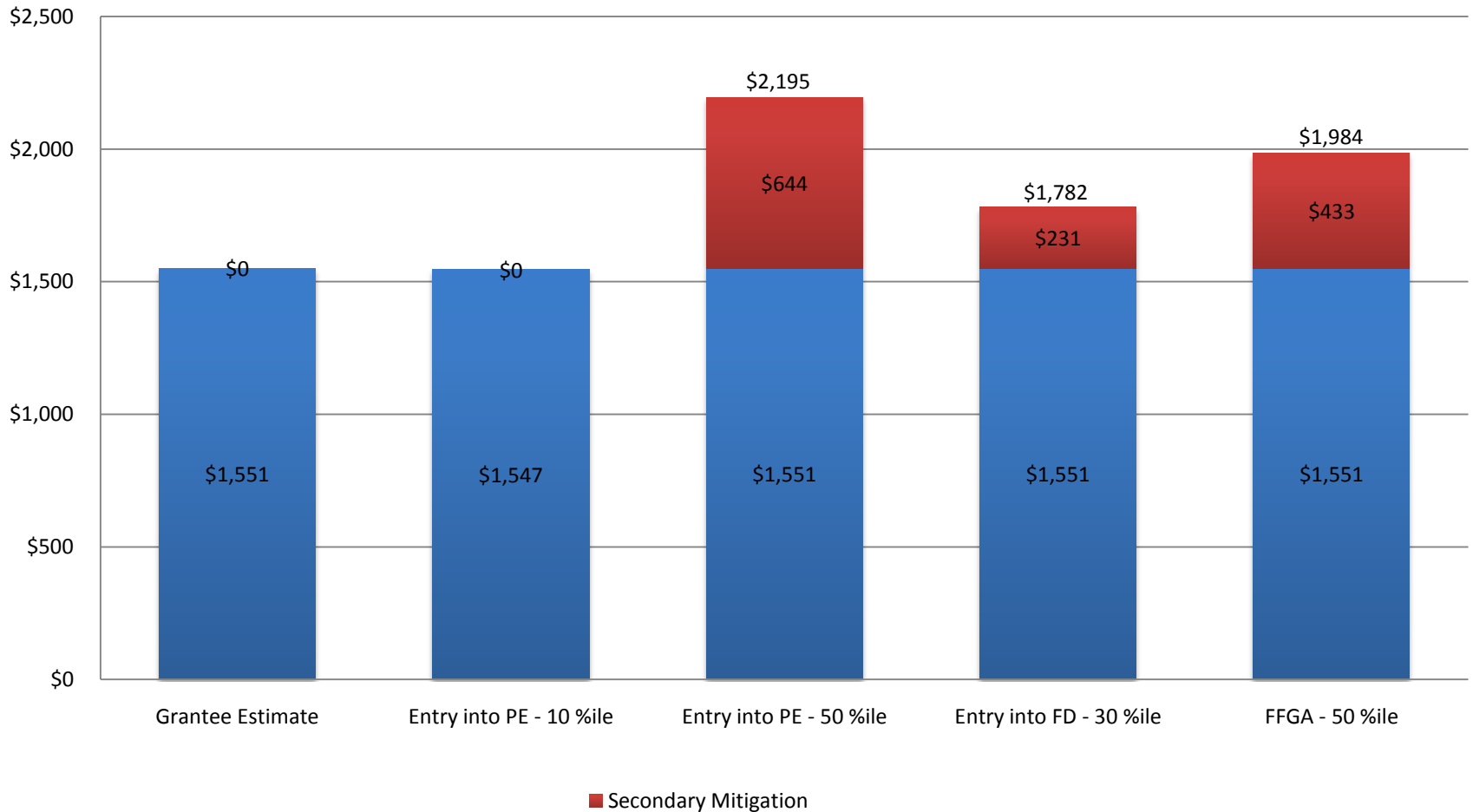
# Looking Ahead to Entry-to-FD

## Regional Connector Entry into Preliminary Engineering



# Looking Ahead to Entry-to-FD

## Regional Connector Entry into Preliminary Engineering



# Considerations

- Risk Assessment – Valuable Exercise at Entry into PE
  - Inform FTA of Project Risks
  - Establish the RCMP
- Mitigation Measures
  - Primary Mitigation
  - Secondary Mitigation – Potentially Premature
- Use of the Target Percentile
- OP-40 and Risk Model Refinement
- Project Budget Represented in the New Starts Program
- Prepare the Grantee for Expectations in the PE Phase